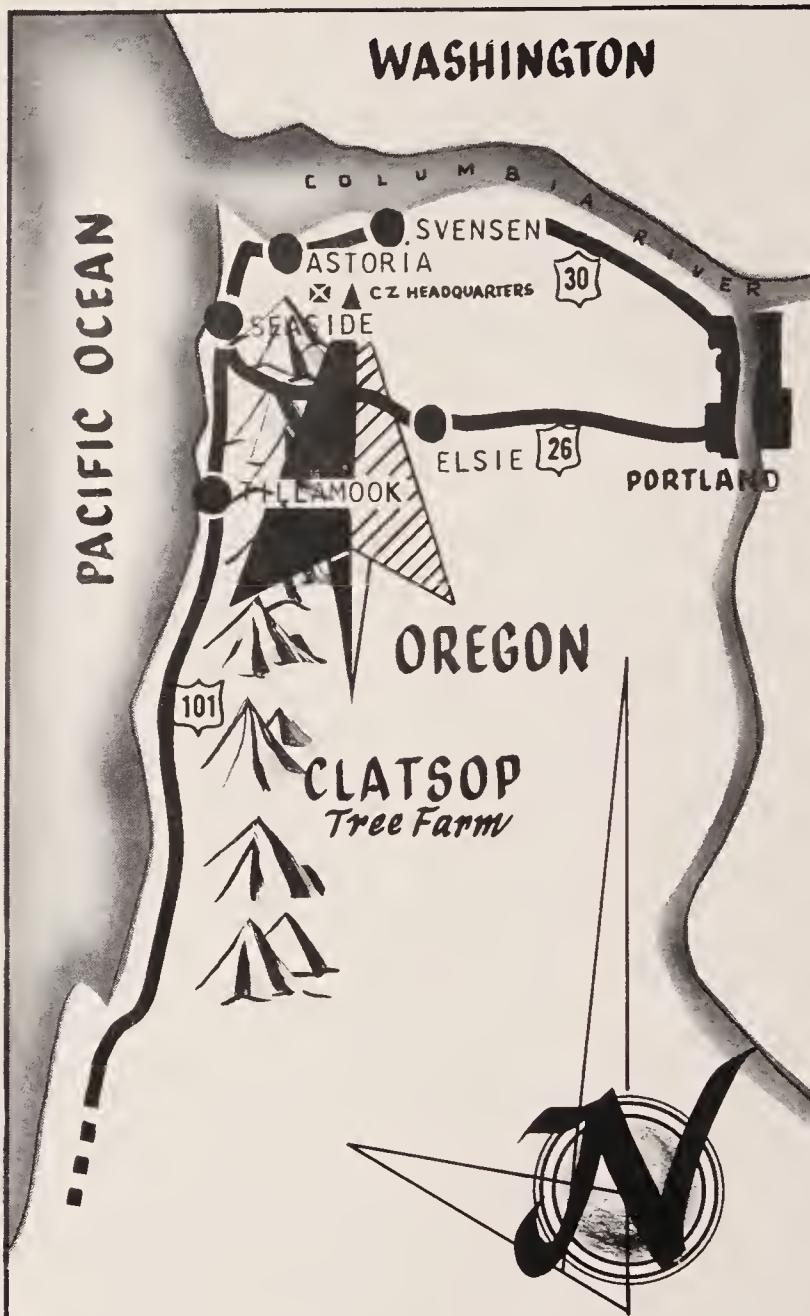


CLATSOP TREE FARM





COVER PICTURE

The world's tallest Sitka spruce is located in the heart of the Clatsop Tree Farm's Klootchey Creek Park.

CROWN ZELLERBACH CORPORATION

CLATSOP TREE FARM

LOCATION

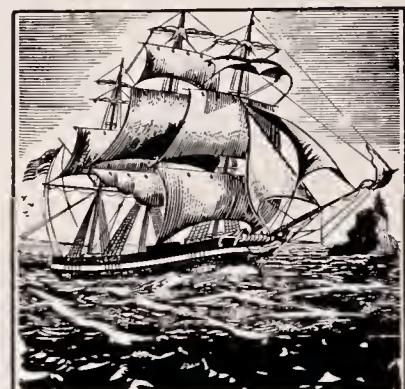
The Clatsop Tree Farm lies in the heart of the Sunset Empire, the far corner of Northwest Oregon. Clatsop county, in addition to its substantial forest industry, is the commercial fishing capital of the Pacific Coast and its beaches and historic shrines are among the state's top tourist attractions. The tree farm extends from Tillamook county on the south to the Columbia River on the north, from the Pacific Ocean on the west to near the summit of the Coast mountain range to the east. The first purchase of forest land on what is now the Clatsop Tree Farm was made in 1893. The tree farm now covers 184,000 acres. About 25 per cent of the timber on the 287 square mile tract is old growth, another 25 per cent is operable second growth and remaining acreage is covered with rapidly growing young trees 30 years or younger. The predominant species is western hemlock. Other types found in commercial quantities are Sitka spruce, Douglas fir, western red cedar, silver fir and red alder.

TREE FARM ECONOMICS

The Clatsop Tree Farm provides employment for about 225 Crown Zellerbach employees who receive about \$1,100,000 in wages annually. Another \$2,000,000 is paid each year to log and road building contractors operating on the tree farm. This is the largest forest industry payroll in Clatsop county. Locally Crown Zellerbach purchases about \$200,000 worth of goods and services each year. This figure does not include equipment and supplies purchased in the area by contractors working on the tree farm. Yearly production of timber amounts to over 100 million board feet. To obtain the best use from every log harvested here, Crown Zellerbach sells the higher grade logs for lumber, shingle or plywood veneer usage. Clatsop county lumber, plywood and shingle manufacturers obtain much of their wood supply from this tree farm. These sales give these forest industries a dependable source of wood and help provide additional county payrolls. To maintain an adequate log supply for the company's up-river mills, some pulp quality logs are purchased in Clatsop county. Northwest Oregon residents earn additional income by purchasing cedar and fern from the tree farm. The cedar is converted into shakes and fence posts, and the ferns are sold to commercial florists throughout the country. Land and timber taxes paid on the Clatsop Tree Farm help support schools and the services of municipal, county and state governments. Crown Zellerbach is Clatsop county's largest single taxpayer.

HISTORY

Trees from this forest have served man's use for several hundred years. Long ago, the coastal Indians used cedar from what is now the tree farm forest to fashion war and trading canoes. Early European explorers landed here, obtaining tall, straight trees for spars to replenish those lost at sea. Captain Robert Gray sailed off the Clatsop coast when he discovered the Columbia River in 1792. In the winter of 1804-05, Lewis and Clark wintered on a six acre site at Young's Bay, southwest of Astoria and next to the present tree farm lands. John Jacob Astor's fur traders founded the present city of Astoria in 1811, the first permanent white settlement in the Northwest. Hudson Bay Company men later traded here with the Indians for furs and made their forts and cabins from Clatsop logs. Pioneers gouged clearings out of the timber for farmland after crossing the continent on the Oregon Trail or sailing round the Horn. More than a century ago ox-loggers began harvesting this timber to saw lumber for California's gold rush boom towns and many overseas markets. In 1884 the first wood pulp manufactured in Oregon was made on the present Clatsop Tree Farm at a site on Young's River, 12 miles east of Astoria. This mill, operated by the Falls Pulp Company, produced five tons of spruce pulp daily which was shipped by sailing vessel to a Stockton, California paper mill. A 155-pound sample of this pulp took first place at the 1893 Chicago World's Fair in competition with the finest eastern pulps. The mill closed in 1905 following construction of more modern up-river mills. During World War I the "Spruce" division harvested great trees in this forest for use in the manufacture of wooden airplanes for the allies. Log production reached a peak in Clatsop county during the 1920's when the county led the state in log volume and when production was almost entirely Douglas fir. Much of the land logged at this time was later acquired by Crown Zellerbach and is now part of the Clatsop Tree Farm. In World War II spruce was cut here to make plywood for the famous British and Canadian "Mosquito" bombers.



SAFETY

The company in cooperation with the International Woodworkers of America, AFL-CIO, Local 5-40, continually seeks to improve employee safety. Lost time injuries on the tree farm woods operations have declined substantially over the last decade.

Clatsop won the 1957 Edward P. Stamm Safety Plaque for its record of achieving the most sizeable reduction in lost time injuries recorded by any company logging division that year. Regular classes in first aid are held for tree farm employees and over 100 hold Red Cross first aid certificates.

FOREST MANAGEMENT

CLATSOP TREE FARM, certified as a unit of the American Tree Farm System* on January 20, 1942, was one of the nation's 16 original industrial tree farms. Crown Zellerbach manages its timberlands much as a farmer crops his acres and seeks with constantly improving equipment to more fully utilize the wood in its mills. The company feels it can assure a continuous supply of wood for the future, based on a long range policy of cutting no more timber from its lands each year than nature replaces by growth. This is tree farming as it is done on privately owned lands. More than 70 per cent of Clatsop county's privately owned, commercial forestland is enrolled in the tree farm program.

LOGGING: The Clatsop Tree Farm has been logged for more than 100 years, beginning with hand logging and ox-teams. Today, loggers fall trees with power chain saws. Tractors, high lead and skyline cable systems yard or pull the logs to the truck loading point (landing). Loading donkeys with swinging booms or shovels with air tongs load the logs on high-staked trucks powered by diesel engines of 150 to 200 h.p.

rating. Trucks haul the logs to the booming grounds on rivers or bays where the load is wrapped with steel bands, picked off the truck, lowered in the water and floated as an "asparagus" bundle. Several truckload bundles are made up into rafts and towed up the Columbia to Crown Zellerbach's mills at St. Helens, West Linn, Oregon or Camas, Washington. Other logs, best suited for poles, piling, lumber or plywood, are sorted, rafted and sold to neighboring mills making these products.



* American Forest Products Industries, Inc., sponsors the American Tree Farm System with more than 10,000 units enrolled in 45 states. The Industrial Forestry Association, Portland, Oregon, sponsors the program in western Oregon and western Washington.

RE-LOGGING: Crown Zellerbach loggers conduct re-logging operations, returning to old logging shows of previous ownerships to recover usable wood which may remain. The vastly expanded utilization programs of northwest forest industries have enabled the company to substantially increase these projects.

SALVAGE LOGGING: The Clatsop tree farmers often use small, light logging equipment and specifically trained crews to recover dead, dying, down or defective green timber on tracts which have been attacked by disease, insects or fire. Some of this timber is used as pulpwood but the largest amount is high quality and goes for lumber and plywood manufacture.

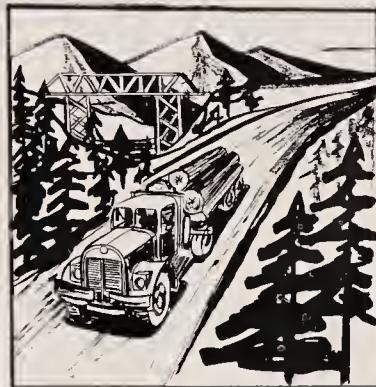
PRE-LOGGING: Removal of "understory" or small trees under the crowns of larger trees which are slated for later harvest is done by pre-logging. The loggers take out this smaller timber before beginning the regular logging operation. If left, these trees would be damaged or broken by the falling and yarding of larger trees during harvesting. Pre-logged trees are used almost entirely for pulpwood.

SEED BLOCKS: Seed block cutting is practiced wherever possible in harvesting timber on the Clatsop Tree Farm. Seed blocks are small tracts of healthy trees left to supply seed for the harvested area. With this method, thousands of small seedlings, tomorrow's timber products, are growing back on cut-over lands adjacent to seed blocks.

SELECTIVE LOGGING: Logging by tree selection is a preferred practice on some of the older timber stands on the Clatsop Tree Farm. Usually the trees selected for cutting are mature or over-mature and are logged for special purposes such as plywood or high grade lumber. In the last two decades, more than 10,000 acres of old-growth hemlock have been selectively logged here. Tree selection for high-grade spruce logs contributed materially to military aircraft production in World War II.

THINNING: Just as thinning of garden crops means better produce, thinning of young growing forests means higher quality, faster growing trees. Our foresters have found that scientific thinnings will enable an acre of timberland to grow almost 50 per cent more usable wood volume than it would produce if left in its natural state. Thinnings are conducted in tracts of young timber of the Clatsop Tree Farm to utilize trees that would otherwise die and serve no useful purpose.

ROAD SYSTEMS: The Clatsop Tree Farm has 350 miles of rock roads and 200 miles of dirt roads, 30 wooden bridges, 4 steel bridges and 4 concrete bridges. This extensive road system provides access for fire suppression and enables efficient transport of harvested timber. Rock roads are constructed at a cost of more than \$12,000 per mile (excluding costs of bridge building) and are of permanent all-weather construction. The average capital investment of these roads to the timberlands they serve is \$125 per acre. Well roaded tree farms provide maximum year-around employment for local loggers. A large investment in forest roads must be made far in advance of logging. First step in the three year process of road development is to obtain topographic surveys and engineering estimates. In the second year, the road bed is cleared and the right-of-way is graded. The graded road is then allowed to stand one year to obtain natural compaction from rainfall and snow. The final rock ballast is applied three years after the project appeared on the engineer's drafting board. Maintenance of these roads is a never ending project constantly requiring reroaking, resurfacing, grading, addition of new or replacement of old culverts and bridges and new cuts and fills. This necessary program requires substantial amounts of labor and capital.



REFORESTATION: Natural reseeding is the most effective method of growing new trees. Only in areas where there is a lack of seed source, danger of brush encroachment or the soils have been damaged by fire do CZ foresters hand plant seedlings or drop seed from helicopters. In problem areas where brush develops, clearing and scarifying with brush-blade equipped tractors prepares the soil for aerial seeding, hand seeding or hand planting. Hand planting began on the Clatsop Tree Farm in the Circle Bridge area on Tillamook Head near Seaside in 1925. From 1925 to 1959, a total of 26,753 acres were restored to forest growth. Of this amount, 15,976 acres were hand planted, 392 acres were hand seeded and 10,395 acres were seeded from the air.



CLATSOP T

FIR



KEEP OREGON GREEN

1792

Captain Robert Gray from his ship Columbia discovered the Columbia River and first sighted the forests which now comprise the Clatsop Tree Farm.

1804-

Lewis and Clark expedition, commissioned by President Thomas Jefferson, wintered on Young's Bay southwest of Astoria and immediately adjacent to the Clatsop Tree Farm.

05

1811

First permanent white settlement in Pacific Northwest established by John Jacob Astor Fur Trading Co.

1850's

First extensive logging in northern Oregon. Early ox-loggers harvested old growth trees to saw into lumber for California gold rush boom towns.

1884

First pulp mill in Oregon to use wood as raw material, started up on Young's River, ten miles south of Astoria. This area is now part of the Clatsop Tree Farm.

1893

Pulp, manufactured from spruce logs harvested on present Clatsop Tree Farm, won grand prize for high quality groundwood pulp at Chicago World's Fair of 1893 in competition with leading eastern pulpmakers.

1920's

Clatsop county was Oregon's leading log producer.

1925

First major reforestation in northwest Oregon started in Tillamook Head area on Clatsop Tree Farm.

1929

First known use of diesel yarding donkey in northwest logging.

REE FARM T'S

KEEP OREGON GREEN



1932

First industrial use of tractors for selective logging occurred on Young's River tract.

1942

Clatsop Tree Farm was one of 16 northwest industrial forest tracts certified as tree farms on January 20. These tree farms were the first industrial units in the nation enrolled in the American Tree Farm System.

1944

First bundling or strapping in North America of truck-hauled logs into rafts for water shipment. Bundling was developed in Sweden and introduced here by Crown Zellerbach and is now used throughout the forest industry.

1944-

First major use by a forest industry concern of aircraft to combat insect outbreak, when Crown Zellerbach used airplanes to drop insecticides on hemlock looper-infested timberlands.

45

1945

First use of weight to measure log production in lieu of conventional scaling in U. S.

1947

First large-scale snag removal project in forest industry launched on Clatsop Tree Farm.

1948

First aerial seeding ever done on forest industry timberlands in Pacific Northwest.

1957

First presentation of Crown Zellerbach-sponsored Edward P. Stamm Safety Award. Plaque was given to the Clatsop logging division for achieving the greatest reduction in time lost accidents recorded in all company logging divisions in 1957.

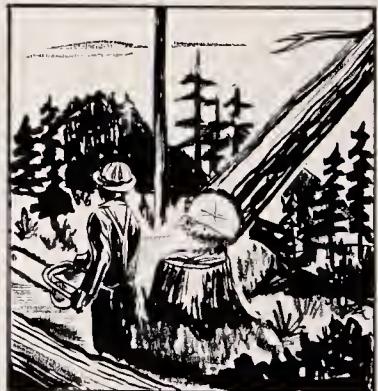
FOREST INSECTS AND DISEASE: In 1943 a plague of tiny insects — hemlock loopers — threatened thousands of acres of prime forest land on the Clatsop Tree Farm. Airplanes flew more than 900 sorties to drop insecticides on the infested areas until the outbreak was controlled. High speed salvage logging was required to save over 200 million board feet which was killed or damaged by the pests. This was the first extensive use of aircraft for insect control by the forest industry. Destructive insects and disease are always present in the forest and occasionally become epidemic. Control of these pests is part of the tree farmer's job.

CONE COLLECTING: Cones collected by local residents on Clatsop lands are purchased for use in the company's local reforestation program. These cones are shipped to Crown Zellerbach's Vernonia, Oregon, seed center where the seed is extracted, dewinged and cleaned. Processed seeds are planted on the forest industries' Col. W. B. Greeley Nursery near Olympia, Washington, or are used for aerial seeding. Seeds that produce the tree farm's huge spruce, hemlock and fir trees are very small. It takes 42,000 Douglas fir seed or 297,000 hemlock seeds, or 210,000 spruce seeds to make a pound.



SNAG FALLING: Snags are the special name tree farmers have for the tall, barkless trees which are the mute reminders of past forest fires or insect attacks.

Tops of these snags are generally dead and dry. They ignite more easily than green timber and are especially vulnerable to lightning strikes. Once on fire, their tops become torches and their sparks and embers can fly through the air for a half mile or more in a strong wind. Good tree farming requires these snags be felled with the usable wood, if any, from them sent to the mills. In a single ten year period following World War II, Crown Zellerbach spent almost a million dollars in snag removal to protect the Clatsop Tree Farm from possible fires originating to the south and east



on the Tillamook Burn. This was one of the forest industries' first major snag falling projects and was started in 1947. A "Clatsop Corridor," an area south and west of Elsie to Jewell, eight miles long and one-half to two miles wide on 8,000 acres, was cleared of snags, and a quarter of the material from these snags was salvaged. This firebreak has been extended by Crown Zellerbach and adjacent owners until today it stretches from the Columbia River at Knappa on the north to Nehalem on the Pacific to the south.

FIREWARNING SYSTEM: The N. W. Forest Protective Association's trained observers man lookouts on Sugar Loaf Mountain and Boiler Ridge on the Clatsop Tree Farm. On Saddle Mountain, Wickiup Mountain, Green Mountain and Nicolai Mountain in Clatsop county and Rector Mountain in Tillamook county, the Oregon State Board of Forestry operates lookouts. This fire warning system functions 24 hours a day from spring until late fall. Early in the morning (5:15 a.m.) and early evening (near sunset) weather data is collected by these lookouts and radioed to the Association's Blue Lake lookout in Tillamook county. Blue Lake is the coordinating station and broadcasts weather summaries to all company logging divisions. On the Clatsop Tree Farm there are also six weather recording stations containing basic weather instruments. On peak fire danger days, airplanes fly patrols over the area looking for any possible fires not spotted by the lookouts. Closure of logging operations occurs when local humidity reaches 35 per cent on calm days and at higher humidities when strong winds and low fuel moistures result in dangerous burning conditions.

COMMUNICATIONS: The Clatsop Tree Farm has 25 miles of telephone lines and 15 emergency telephones in the woods. The 2-way high frequency radio has 20 mobile units (2 on fire trucks), 3 semi-fixed stations, 2 portable, 1 "walkie-talkie," and 1 base station unit, all operated by the Communications Services Association.

FIRE EQUIPMENT: 3 pumps mounted on pickup slide-on units, 3 dismountable fog machines, 10 tankers of 750 to 2000 gallon capacity, 110 back pump cans, 2-1200 gallon towed tanks, 3-1500 gallon lift-on tanks to fit on log trucks, 3 canvas liners to convert rock hauling trucks into 750 gallon tankers, 14 portable forest pumps, 2-500 gallon per minute tanker filler pumps, 25,000 feet of forest hose and numerous caches of hand tools and heavy

equipment (i.e., bulldozers) are continually ready to combat any fire outbreak. During the off-season bulldozers often convert small areas into water ponds for storage during the dry season, making readily available a source of water for fire control.



FIRE SCHOOL: Regular fire schools are held starting in the spring and continue throughout the season to train tree farm personnel on forest firefighting methods.

RECREATION

LAND USE POLICY: Crown Zellerbach has a long established policy of multiple use of its forestlands for timber harvesting, watershed management and recreation. The Clatsop Tree Farm is open to sportsmen except where fire conditions are hazardous. Area fire closures for hunters and fishermen are based on class of day, weather forecasts, time of year and days since last rain. No open fires or public overnight camping is permitted during the October deer season except in prepared camping areas near main highways. Past weather records and experience show this to be the most dangerous period of the year from the standpoint of fire danger. In some instances, in areas where logging operations are underway, hunting or fishing is banned during weekdays to protect both loggers and sportsmen.

FISHING AND HUNTING: Thousands of hunters and fishermen visit the Clatsop Tree Farm each year to seek deer, elk, bear, steelhead, trout and salmon. One of the nation's largest herds of Roosevelt elk lives on the Clatsop Tree Farm. Hunters annually take about 250 deer, 180 elk, 90 bear, 25 coyote and a few bobcats. The nearby publicly-owned Clatsop county beaches are well known for their excellent razor clam digging.



TERRAIN AND STREAMS: The Clatsop Tree Farm lands vary from low coastal plains to extremely mountainous country. Low elevation is sea level; high elevation is 3,200 feet above sea level. Saddle Mountain (elevation 3,279 feet) is visible

from all portions of the tree farm. Major streams are the Lewis and Clark River, Young's River, Nehalem River and Necanicum River. Lesser but important drainages are Bear Creek, Big Creek, John Day River, Walluski River, Klaskanine River, Klootchey Creek, Buchanan Creek, Elk Creek, Humbug Creek, Fishhawk Creek, Soapstone Creek, Mary's Creek and Mud Creek.

WORLD RECORD-SIZE SPRUCE TREE AND FIR TREE: In the center of the tree farm's Klootchey Creek Park is the world's tallest Sitka spruce tree. This forest giant, permanently protected from cutting, is 195 feet tall, 15.9 feet in diameter and contains 60,000 board feet of lumber, enough wood for 6 two-bedroom wood houses or 100 tons of paper. The ink was barely dry on the Magna Charta when this tree sprouted as a seedling over 700 years ago. Permanently protected for future generations is the world's largest living Douglas fir. This record-sized tree is located on the Clatsop Tree Farm about 2 miles east of the Cannon Beach junction and 2 miles up Klootchey Creek road. The huge specimen, estimated to be at least 1,000 years old, is 15.7 feet in diameter at breast height and 225 feet tall to a broken top 30 inches in diameter at the break. It contains over 100,000 board feet of lumber which would make 10 two-bedroom wooden frame homes or 150 tons of paper. The tree, fenced because trampling around its feeder roots would quickly kill it, began growing 500 years before Columbus discovered America. Visitors are cordially invited to see these trees and directions are clearly marked at the interior entrance of the Kootchey Creek park.

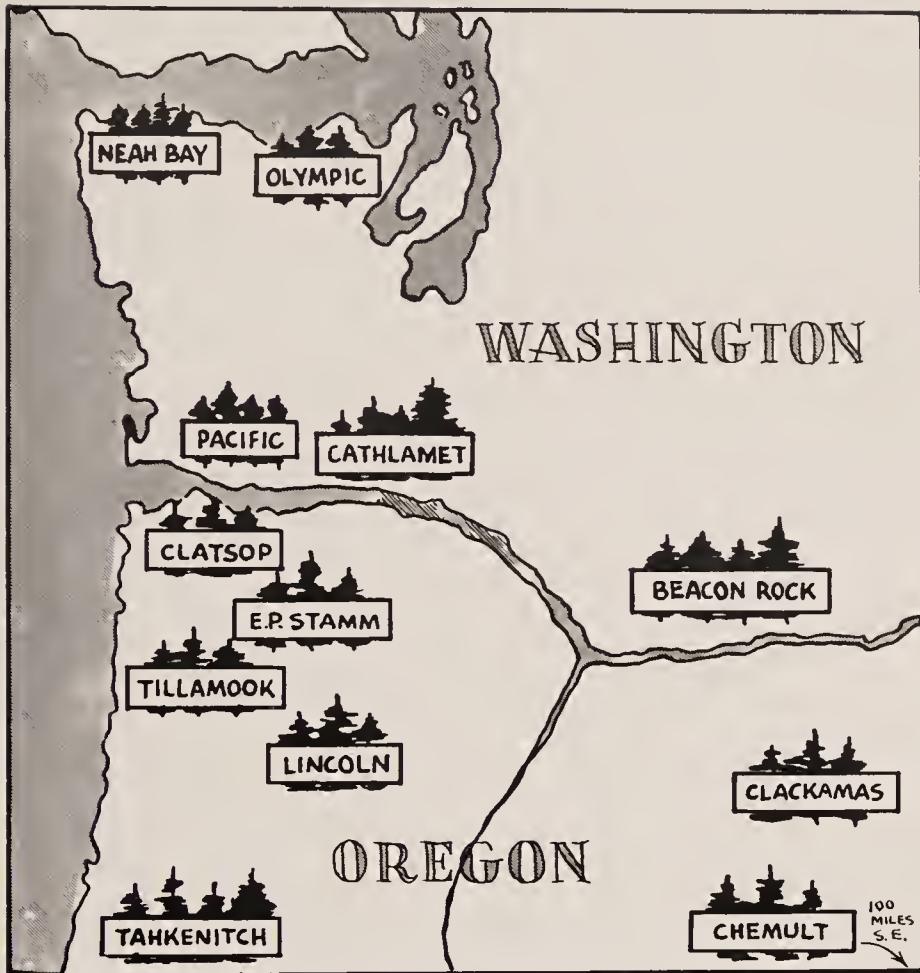
PARKS: There are four picnic areas with picnicking or camping facilities on the Clatsop Tree Farm and several other recreational spots. The parks include: Klootchey Creek Park near Klootchey Creek-Sunset highway junction. This area has toilets, piped water, tables and parking facilities. Black bridge picnic area on Necanicum River where Sugar Loaf road joins the Sunset Highway has toilets, tables, fireplaces and limited parking. Warrenton dam on Lewis and Clark River at Warrenton dam has toilets and table. Big Creek east of Svensen on Big Creek just below Camp 10 road has table and fireplace.



World's Largest Douglas Fir



TREE FARMS



Crown Zellerbach Corporation has 12 certified tree farms in the Pacific Northwest. The company's seven Oregon tree farms include 425,000 acres. The five Washington tree farms cover an area in excess of 230,000 acres.

